Species Listing PROPOSAL Form:

Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: ___***Desmodium humifusum*** Current Listed Status (if any): _**Threatened**_

Common name: ____**Spreading Tick-Trefoil**

Proposed Action:

_____Add the species, with the status of : _____ Change the scientific name to: _____
__**X**__Remove the species Change the common name to: _____
_____Change the species' status to: _____ (Please justify proposed name change.)

Proponent's Name and Address:
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Association, Institution or Business represented by proponent: **NHESP**

Proponent's Signature: Date Submitted: **January 4, 2008**

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581

Justification

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) Taxonomic status. Is the species a valid taxonomic entity? Please cite scientific literature.

Desmodium humifusum Beck is a validly published name (*Bot. U. St. 86.*); however the taxon is hybrid-derived (Raveill, 2002) and always occurs with parent taxa *D. paniculatum* and *D. rotundifolium* (Raveill, 2002 and unpublished NHESP data). Raveill (2002) found a high level of heterozygosity (higher than would be expected in a stable, very rare species) and reported that "no unique alleles were found in *D. humifusum*; instead the alleles of *D. humifusum* were a composite of those of the putative parent species, *D. paniculatum* and *D. rotundifolium*." He concluded that a hybrid origin for *D. humifusum* was the most parsimonious explanation of this excessive heterozygosity and composite nature of its alleles.

To restrict MESA eligibility to newly-evolved taxa of hybrid origin (nothospecies, rather than unstable hybrids), NHESP listing criteria states that "*a plant taxon of hybrid origin may be listed if it has been*

shown to be both: (1) capable of sexual reproduction; and (2) able to maintain discrete populations separate from the parent taxa" (NHESP, 2007). Clearly, *D. humifusum* does not meet the second criterion for MESA eligibility, and therefore must be delisted.

(2) Recentness of records. How recently has the species been conclusively documented within Massachusetts?

(3) Native species status. Is the species indigenous to Massachusetts?

(4) Habitat in Massachusetts. Is a population of the species supported by habitat within the state of Massachusetts?

(5) Federal Endangered Species Act status. Is the species listed under the federal Endangered Species Act? If so, what is its federal status (Endangered or Threatened)?

(6) Rarity and geographic distribution.

(a) Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?

(b) What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)? Is the species a state or regional endemic?

(7) Trends.

(c) Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any long-term trend in these factors been documented?

(8) Threats and vulnerability.

(d) What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

(e) Does the species have highly specialized habitat, resource needs, or other ecological requirements? Is dispersal ability poor?

Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

(a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates

(b) Amount of protected habitat and/or number of protected occurrences

(c) Management of protected habitat and/or occurrences

Literature cited, additional documentation, and comment

NHESP, 2007. *Listing Endangered Species in Massachusetts: The Basis, Criteria, and Procedure for Listing Endangered, Threatened, and Special Concern Species in Massachusetts.* November 28, 2007 version. Massachusetts Natural Heritage & Endangered Species Program, Division of Fisheries & Wildlife, Westborough, Massachusetts.

Raveill, J. 2002. Allozyme evidence for the hybrid origin of *Desmodium humifusum* (Fababceae). *Rhodora* 104: 253-270.